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ABSTRACT

In the Louisiana Basic Skills Testing (BST) program, initiated in 1982, criterion-referenced tests of language arts and mathematics were administered to all second grade students. Longitudinal data over three years tracked four cohorts of students to address when retention appears to be most effective and whether a combination of repeated classroom instruction and remedial services can correct such deficiencies. The issue of relative effects of early or later retention was addressed by comparing the performance of promoted-then-retained and retained-then-promoted students using the Statistical Analysis System general linear models procedure to compare 1984 grade 3 performance of the two groups with initial 1982 grade 2 performance differences controlled. The issues of promotion and then mastery of subsequent grade level skills, as well as the prevention of later academic difficulties were addressed by computing the numbers and percents of students meeting the performance standards of the BST and the mean BST scores of promoted and then retained group of students. The results indicate that a combination of remedial instruction and a repeated year of classroom instruction appears adequate for correcting skill deficiencies among the majority of students. (PN)

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THE EFFECTS OF REMEDIATION AND RETENTION UPON BASIC SKILLS
PERFORMANCE AMONG ELEMENTARY STUDENTS PARTICIPATING
IN A STATE BASICS SKILLS TEST PROGRAM

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INTRODUCTION

State testing programs have grown in sophistication and extensiveness over the past decade, with all but three states currently engaged in either state assessment or minimum competency testing efforts. Among those states with a testing program, 38 are involved in minimum competency testing (Burnes, 1985).

This study is part of a series of examinations of Louisiana's minimum competency tests (and accompanying compensatory education program) that have been carried out since the programs were instituted in 1982. These studies have been concerned with the effects and efficiency of testing and remedial services. They have found that the state's compensatory education program has an identifiable effect upon basic skills mastery in addition to a repetition of classroom instruction when the performance of retained students receiving these services is compared with that of students not receiving remedial services (Rachal, 1984). Louisiana has also found that it makes little difference whether compensatory education is provided in summer school or during the regular school year or whether it is accompanied by Title 1 remedial instruction that is presumably directed toward the same basic language arts and mathematics skills addressed by the state's compensatory program (Rachal and Hoffman, 1984).

As far as can be determined, Louisiana is the only state requiring that student performance on the statewide minimum competency test be considered in local school districts' promotion decisions. Evaluations of the Louisiana State-Funded Compensatory/Remedial Program have found that the proportion of students retained has increased among the grade levels included in the state minimum competency testing program since it was introduced in 1982, but that districts are still almost as likely to promote as to retain students who do not achieve the identified standards on the tests (Rachal, 1985). This has been explained in part by the limitations most district policies place upon the

number of times a student can be retained within the span of the elementary grades; the state test identifies those lowest-performing students who are most likely to have already been retained the maximum number of years allowed. And, the data indicating that students served in summer school perform no better than those receiving remedial services during the regular school year suggest that districts cannot use summer school to correct skills deficiencies and then promote students with confidence that they will not have later difficulties. This finding is in keeping with a study conducted in a large southern school district, in which teachers noted little difference between the performance of retained students who had attended summer school and those who had not (Austin Independent School District, 1983).

Neither retaining students for an additional year of classroom instruction not providing remedial services in addition to regular instruction are without costs. The present study recognizes that in Louisiana elementary students with identified weaknesses in language arts and mathematics skills may or may not be retained, and will receive state-supported remedial instruction. It addresses the questions of when retention appears to be most effective, and whether a combination of repeated classroom instruction and remedial services can ultimately correct such deficiencies.

Louisiana Basic Skills Test and Compensatory Education Program

The Louisiana Basic Skills Testing (BST) program was initiated in the spring of 1982, with criterion-referenced tests of language arts and mathematics administered to all second grade students, regular and special education, who were addressing the state's minimum standards in these subject areas. Students who scored less than 75 percent correct in either subject area were provided

with 70 hours of remedial instruction in their identified deficient skills during the 1982-83 school year or the summer preceding it through the State-Funded Compensatory/Remedial Program. Third grade was added to the testing and compensatory education program in 1983, and fourth grade was added in 1984. All students qualifying for compensatory education were provided these services, with instruction limited to deficient skills identified through the grade level BST on which students had been tested. School districts, in accordance with their pupil progression policies, could either promote these students or retain them. In the spring of each year students were tested on the BST appropriate to their enrolled grade levels. Thus, a qualifying student who was retained in second grade was retested on this same grade level after receiving a year of compensatory education in second grade skills along with a year of classroom instruction in third grade skills, and was then tested on the third grade BST. There was minimal state control of districts' compensatory education programs. About half of these programs were seven-week summer schools, and about half were 70 hours of small-group instruction for each subject area in which the student qualified during the regular school year, typically provided for one hour a day beginning at the start of the school year and using workbooks or teacher-made materials directed toward the skills measured on the BST. Instruction was provided by certified teachers and students were most likely to be pulled from the regular classroom for their compensatory education.

Evaluation Questions

Earlier analyses of BST performance had found that retained students participating in the compensatory education program made greater gains than other retained students when initial BST performance differences were controlled, that special education as well as regular education students profited from

the compensatory education services, and that there were few differences in gains between students served by Chapter 1 teachers or other teachers, or among students served in summer school, the regular school year, or at both times. Longitudinal data over three years (from 1982 to 1984) made it possible to examine three additional questions concerning the effect and efficiency of the program:

1. Is retention more effective at earlier grades than at later grades?
2. Can students profit from classroom instruction if they have not mastered the skills appropriate to the previous grade?
3. Does early identification and remediation of skills deficiencies prevent later difficulties?

These questions were drawn from concerns among State Department of Education administrators and State Board of Elementary and Secondary Education members about school districts' promotion of students who did not perform successfully on the BST and about the ability of the testing and compensatory programs to prevent future academic difficulty in school.

Data Sources

The data for this study were taken from three years of records of student BST performance. From the students originally scoring less than 75 percent correct in language arts and/or mathematics on the 1982 Grade 2 BST, two cohorts were identified to answer the first question: those who were promoted in 1982 and retained in 1983, and those who were retained in 1982 and promoted in 1983. The testing patterns of these two groups were as follows:

Promoted-Retained

1982: Grade 2 BST
1983: Grade 3 BST
1984: Grade 3 BST

Retained-Promoted

1982: Grade 2 BST
1983: Grade 2 BST
1983: Grade 3 BST

Individual student files were matched by name across three years to construct the longitudinal data set, which included 1198 students. The total longitudinal data set from which these groups were drawn also included students who had been consistently promoted or retained, and accounted for about 60 percent of the group initially qualifying for services in 1982. There is no way of determining the extent to which the data set constructed for this analysis is representative of the total population of students. The assumption is made that the sample contains no biases that would invalidate comparisons between promoted-retained (PR) and retained-promoted (RP) students.

Data Analysis

All analyses were limited to regular education students because information had suggested that the promotion or retention of special education students was often affected by factors other than basic skills mastery. The first evaluation question, that about the relative effects of early or later retention, was addressed by comparing the performance of PR and RP students using the SAS (Statistical Analysis System) general linear models procedure to compare 1984 Grade 3 BST performance of the two groups with initial 1982 Grade 2 BST performance differences controlled. The second and third questions were addressed by computing the numbers and percents of students meeting the performance standards of the BST and the mean BST scores of promoted and retained groups of students.

RESULTS

Effect of Retention at Grade 2 Versus Grade 3

Table 1 presents the analysis of 1984 Grade 3 BST language arts performance for 1982 compensatory education qualifiers who were promoted to third grade and then retained in third grade in 1983 versus those who were retained in second grade in 1982 and then promoted to third grade in 1983. The total model, which included 1982 Grade 2 BST language arts scores and the promotion-retention variable, had a probability of less than .0001 and accounted for approximately 12.2 percent of the variation among student 1984 Grade 3 BST language arts scores. The effect of PR versus RP was not statistically significant, using a .05 probability level as the criterion, while the effect of the covaried 1982 BST scores was. The actual means of the two groups show that the PR students' scores in both 1982 and 1984 were slightly higher than those of the RP students.

The same analysis of mathematics performance is shown in Table 2. Here the findings are somewhat different. The overall model had a probability level of less than .0001, but accounted for only 6.0 percent of the variance among 1984 Grade 3 BST scores in mathematics. Both the promotion-retention factors and the covaried 1982 Grade 2 BST scores in mathematics had significant effects ($p < .05$). The actual mean scores for the two student groups show that PR students had higher average scores in 1982 and 1984; the least square means for the 1984 BST show the same difference, although it is somewhat less favorable relative to the PR group.

In both mathematics and language arts, students who were promoted and then retained showed slightly higher performance after two years than students who were retained and then promoted. However, when initial test score differences were taken into account, only the mathematics test results showed performance differences that cannot be attributed to chance.

Table 1. Effect of Retention at Grade 2 (RP) Versus Grade 3 (PR)
On Grade 3 BST Language Arts Performance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F	R - Square
Model	2	25721.49	12860.75	70.55	0.0001	0.122
Error	1015	185031.55	182.30			
Corrected Total	1017	210753.04				

PR vs RP	1	505.65		2.77	0.0961	
Grade 2 1982 BST	1	24598.56		134.94	0.00001	

Retention Schedules	Number	Actual Means: Grade 2, 1982	Actual Means: Grade 3, 1984	Least Square Means Grade 3, 1984
PR	233	62.28	82.72	82.08
RP	785	60.50	80.22	80.40

Table 2. Effect of Retention at Grade 2 (RP), Versus Grade 3 (PR)
on Grade 3 BST Mathematics Performance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F	R - Square
Model	2	7066.12	3533.06	18.30	0.0001	0.060148
Error	572	110413.36	193.03			
Corrected Total	574	117479.48				
PR vs RP	1	998.07		5.17	0.0233	
Grade 2 1982 BST	1	5371.51		27.83	0.0001	

Retention Schedules	Number	Actual Means: Grade 2, 1982	Actual Means: Grade 3, 1984	Least Square Means Grade 3, 1984
PR	152	64.71	82.34	81.69
RP	423	61.98	78.45	78.68

-7.1-

Promotion and Mastery of Subsequent Grade Level Skills

Table 3 presents information about the performance of students who qualified for compensatory education in 1982 and 1983 and who were promoted to the subsequent grade level. Each of these groups of students qualified for and received compensatory education for skills at one grade level of the BST but received regular classroom instruction and were tested in the following spring on the next higher grade level.

Only the Grade 2 BST was administered in 1982. Approximately 10.8 percent of the students across the state failed to meet the 75 percent correct performance standard on this test in language arts and/or mathematics. Fifty percent of those students were promoted to third grade. When they were tested on the Grade 3 BST in 1983, 40 percent of those promoted met the performance standard in language arts and 39 percent met the standard in mathematics. In 1983, approximately 7.5 percent of the students in Louisiana scored less than 75 percent correct in either or both subject areas of the Grade 2 BST; 46 percent of these students were promoted to third grade. In the following spring, 46 percent of those promoted achieved the Grade 3 BST performance standard in language arts, and 44 percent met it in mathematics.

About 13.9 percent of the students in the state failed to meet the performance standards of the Grade 3 BST when it was introduced in 1983. However, 71 percent of these students were promoted to fourth grade. The standard for language arts and mathematics was set at 80 percent correct for the Grade 4 BST in 1984. Of the promoted students who had not met the third grade standards, 36 percent met the fourth grade standard in language arts and 51 percent met the standard in mathematics. The results show that the majority of students who are promoted after failing to meet the BST standards cannot meet the standards of the BST for the subsequent grade level even though they are receiving compensatory education for their identified skills deficiencies and classroom instruction in the skills on which they will be tested.

Table 3. Percentage of Promoted Qualifying Students Meeting BST Standards
in Language Arts and Mathematics, 1983 and 1984

	Number Qualifying	Percent Qualifying	Percent Qualifiers Promoted	Percent Meeting Language Arts	Standard Mathematics
1982 Grade 2 BST	5179	9.7	50	40	39
1983 Grade 2 BST	4113	7.5	46	46	44
1983 Grade 3 BST	7446	13.9	71	36	51

-6-

Prevention of Later Academic Difficulties

Three years of BST data made it possible to track four cohorts of students that developed from the group initially qualifying for second grade compensatory education in 1982. These groups are shown on Table 4. When numbers of students do not match those shown on Table 3 this is because of incomplete longitudinal data.

Only 14 students were retained in second grade for both 1983 and 1984. After three years of second grade classroom instruction all met the standards for the Grade 2 BST in 1984. Two students (15 percent of the language arts qualifiers) required two years of compensatory education.

Among the students who were retained in second grade in 1983 and promoted to third grade in 1984, 74 percent met the 1984 Grade 3 BST standard in language arts and 67 percent met the standard in mathematics. Of these students, six percent received two years of remedial services in language arts and three percent received two years of remediation in mathematics (in other words, these students failed the Grade 2 BST two times in a row).

Of the students promoted to third grade in 1983 and retained in that grade in 1984, 79 percent met the 1984 Grade 3 standard in language arts and 80 percent met the standard in mathematics. However, 81 percent of the students received two years of compensatory education in language arts and 78 percent received two years of services in mathematics.

The final cohort consisted of students who were promoted to the third grade in 1983 and to the fourth grade in 1984. In that group 40 percent met the standard for language arts on the 1984 Grade 4 BST and 44 percent met the in mathematics. And, in this cohort 42 percent received two years of remedial services in language arts and 45 percent received two years of compensatory education in mathematics.

Table 4. 1984 BST PERFORMANCE OF REGULAR EDUCATION STUDENTS
WHO INITIALLY QUALIFIED FOR COMPENSATORY/EDUCATION
SERVICES ON THE 1982 GRADE 2 BST

	LANGUAGE ARTS				MATHEMATICS			
	Number Students	BST Mean	Met BST Number	Standard Percent	Number Students	BST Mean	Met BST Number	Standard Percent
<u>Retained 83; Retained 84</u> N = 14								
1982 Gr. 2 BST	13	54.74	-	-	6	51.39	-	-
1983 Gr. 2 BST:	12	81.53	10	83.33	5	84.00	5	100.00
1984 Gr. 2 BST:	13	94.36	13	100.00	6	96.11	6	100.00
• one year Comp Ed	11	94.55	11	100.00	6	96.11	6	100.00
• two years Comp Ed	2	93.33	2	100.00	0	-	-	-
<u>Retained 83; Promoted 84</u> N = 890								
1982 Gr. 2 BST	785	60.50	-	-	424	61.98	-	-
1983 Gr. 2 BST:	781	91.84	733	93.85	422	90.91	411	97.39
1984 Gr. 3 BST:	786	80.21	582	74.05	424	78.48	286	67.45
• one year Comp Ed	738	81.17	564	76.42	413	78.76	281	68.04
• two years Comp Ed	48	65.44	18	37.50	11	68.09	5	45.45
<u>Promoted 83; Retained 84</u> N = 308								
1982 Gr. 2 BST	234	62.32	-	-	152	64.71	-	-
1983 Gr. 3 BST:	233	61.36	43	18.45	150	62.43	31	20.67
1984 Gr. 3 BST:	233	82.72	185	79.40	152	82.34	122	80.26
• one year Comp Ed	44	87.06	41	93.18	33	84.21	29	87.88
• two years Comp Ed	189	81.71	144	76.19	119	81.82	93	78.15

-11-

Table 4. Continued

	LANGUAGE ARTS				MATHEMATICS			
	Number Students	BST Mean	Met BST Number	Standard Percent	Number Students	BST Mean	Met BST Number	Standard Percent
<u>Promoted 83; Promoted 84</u>								
N = 809								
1982 Gr. 2 BST	553	63.49	-	-	388	66.10	-	-
1983 Gr. 3 BST:	547	74.55	314	57.40	385	73.99	212	55.06
1984 Gr. 4 BST	557	71.66	221	39.68	392	75.29	173	44.13
● one year Comp Ed	324	77.60	166	51.23	219	79.56	122	55.71
● two year Comp Ed	233	63.40	55	23.61	173	69.88	54	31.21

-12-

Across all four groups of students, approximately 30 percent required compensatory education in language arts for two years, and about 16 percent required two years of services in mathematics. The small number of students who had three (or possibly more) years of second grade classroom instruction all eventually mastered these skills. Those who were retained once during the period between 1982 and 1984 had similar performance on the 1984 Grade 3 BST, but those who were retained in second grade were considerably less likely to require two years of compensatory education than those who were initially promoted to third grade and then retained. About 60 percent of the students who were not retained between 1982 and 1984 were able to master the Grade 4 BST, but about two out of every five students in the group that was consistently promoted required two years of compensatory education -- meaning that they were unable to meet the standards of the 1982 Grade 2 or the 1983 Grade 3 BSTs. It should be remembered that only a small proportion of the second grade students in the state failed to meet the Grade 2 BST standards in 1982, and that these percentages must therefore be applied to relatively small numbers of students. With that in mind, the results in Table 4 suggest that with enough repetition of remedial and regular classroom instruction virtually all students can master the basic skills, but that a few students appear likely to require additional remedial services throughout their academic careers.

DISCUSSION

The results shown here suggest that in the long run it makes little difference whether students who fail to master second grade basic skills are retained in second grade or promoted to third grade and then later retained. The slightly higher scores of students who were promoted and then retained are largely explained by their higher initial performance on the Grade 2 BST. However, there are other reasons that argue for retaining students in the grade in which their skills difficulties are first identified. Those students retained in second grade were far less likely than their promoted peers to require two years of compensatory education, so early retention reflects a cost savings. Teachers and administrators working with the program also feel that it is less damaging to students' self concepts to be retained at earlier grades, and that younger students are less likely to feel embarrassed about being removed from the classroom for remedial instruction.

The data also suggest that BST performance does not have to be an absolute criterion for promotion. Louisiana school districts may promote students who fail to meet the BST standards, and virtually all have limitations on the number of times a student can be retained within the elementary grade span. This has not removed the objections of those who feel a student should be automatically retained if he has not mastered the basic skills for his grade. While the majority of promoted students described here were not successful on the next level of the BST, some were. There were however, some students who received grade 2 compensatory education in 1983 and grade 3 compensatory education in 1984; these were the students receiving two years of compensatory education among the retained-promoted and promoted-promoted groups shown on Table 4. These groups (each receiving two years of remedial services) had low passing

rates on the 1984 BST, suggesting that while a single failure of the BST may not always warrant retention in grade, repeated failures argue strongly against promotion.

At this point the combination of remedial instruction and a repeated year of classroom instruction appears adequate for correcting skills deficiencies among the majority of students. Some students seem to need continuing remedial services, at least across the three grade levels examined so far. Again, some policy makers involved in designing the compensatory/remedial program had argued that early identification and remediation would permanently correct the academic problems of every child. The results to date suggest that while this is generally the case, it does not hold true for all children.

Fifth grade will be added to the testing and compensatory education programs in Louisiana in 1985. Pending legislation makes it unclear at this point whether the programs will follow their original design of adding a grade level every year until second through twelfth grades are tested annually in 1992. Additional grades in the testing/remediation package would provide more information about the longitudinal effects of compensatory education.

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